DOCUMENT RESUME

ED 053 817 24 PS 005 000

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|---|---|
| AUTHOR | Hucklesby, Sylvia |
| TITLE | Opening Up the Classroom: A Walk Around the School. |
| INSTITUTION | ERIC Clearinghouse on Early Childhood Education, Urbana, Ill. |
| SPONS AGENCY | National Center for Educational Communication (DHEW/OE), Washington, D.C. Division of Information Resources.; Office of Economic Opportunity, Washington, D.C. |
| BUREAU NO | BR-0-0288 |
| PUB DATE | Aug 71 |
| CONTRACT | OEC-0-70-2623(519) |
| NOTE | 12p. |
| EDRS PRICE | EDRS Price MF-$0.65 HC-$3.29 |
| DESCRIPTORS | Art Materials, *Discovery Learning, Language Arts, Mathematics Materials, *Natural Resources, Science Materials, Self Directed Classrooms, *Student Motivation, *Teacher Role, *Teaching Techniques |
| IDENTIFIERS | Open Education |

ABSTRACT

Open education practices are illustrated in this paper in which children's natural interest in the outdoor world is used to outline learning activities which might result from a short nature walk. The teachers' objective is to help the child learn strategies and skills which will enable him to acquire, sort, store and use information, in contrast to learning a body of facts. The paper argues that teachers should encourage the child through dialogue and discussion, leading him to a level of interest which will then sustain self-directed activity. Specifically discussed are ways to teach math concepts, science, language arts, and art using various natural materials such as stones, sticks, leaves and flowers. (NH)

ED053817

PA-24
BR-0-0288
OEC-0-70-2623
(519)

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# OPENING UP THE CLASSROOM: A WALK AROUND THE SCHOOL

by

Sylvia Hucklesby
University of Illinois

August 1971

PS 005000

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This paper was produced pursuant to a contract with the Office of Education, U.S. Department of Health, Education and Welfare and a grant from the Office of Economic Opportunity. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment. Points of view or opinions stated do not, therefore, necessarily represent official Government position or policy.

## Introduction

The interest of teachers and parents in what we have come to call "open education" has been increasing noticeably in the last several years. One of the sure signs of this interest is the growing number of requests for information in the form of bibliographies, guidebooks and other kinds of resources to help guide the progress of those getting started.

This short paper by Sylvia Hucklesby offers us a good example of one of the essential elements of open education: capitalizing on children's natural interests. From our experience with young children, we know what kinds of activities quickly appeal to them (a walk around the school neighborhood is one example). From our own knowledge about the cognitive processes and styles of young children, we know what questions, assignments, tasks or projects to prepare which would extend and build upon those natural interests. This paper is an outline of possible questions and projects which might follow upon a walk around the school. It was generated in a few minutes after the question was raised "How do you maximize children's natural interest in picking up things around them?"

Teachers who want to "open" up their classes might rehearse in their own minds the process of generating lists of likely and interesting followup activities to organize for young children. Such rehearsal helps teachers to develop the "open" style and be ready to capitalize on the spontaneous observations of children.

While visiting in Head Start classes I have seen many routine events from which teachers might have launched intellectually stimulating assignments, if they had thought about it before hand. Here are some examples: Do you weigh more standing up or sitting down? How many encyclopedias do you weigh? Do you weigh more standing on your head? Does an ice cube melt faster in the

dark corner or bright corner? Does it melt quicker indoors or outdoors? If you color the ice cubes, which one melts first, the red or the green? The answers to all of these questions are empirical--children can make guesses (hypotheses); they can tell you the reasons for their guesses (theory), and they can verify or test their guesses by checking the facts (experiments).

We hope this paper gives you ideas. We would welcome hearing from you about what works well for you.

Lilian G. Katz, Ph.D.
Director, ERIC/ECE

One of the goals of "open education" is that children should learn through their own interests. In order for this to happen, the teacher needs to stimulate natural curiosity about everything in the environment. He must encourage children to formulate questions and look for answers. The object of such learning is not that the child should amass a great number of more or less isolated facts about what he is interested in, but that he become equipped with strategies and basic skills with which to acquire, sort, store and use information. The teacher must therefore be sensitive to the learning potential of the child's interests so that she can guide him with this object in view.

This paper describes a way in which a teacher might use a nature walk to produce a large amount of readily accessible learning material and lead children to the first important step in this kind of learning the expression of curiosity.

Curiosity is a necessary precursor of "interest" but does not imply any commitment on the part of the child. Teachers have to encourage the child's curiosity, through dialogue and discussion, and lead him to a level of personal commitment sufficient to sustain self-directed activity. Since children in an open classroom are usually working independently because of the diversity of their individual interests, this commitment is fundamental. The activity the child engages in to follow up his interest leads him to practice and improve basic skills, and to record and make his findings a personnal achievement in which he can find satisfaction. Such satisfaction or success facilitates learning. It is not dependent upon the comparative success or failure or the other children but comes from a sense of increasing control over the events and information around him.

The more the knowledge a child obtains from a particular interest can be generalized, the greater value it will have for him. For this reason it is important for the teacher to be able to relate particular interests to the general scheme of cultural resources available. There are many ways in which any object of a child's interest may be related to one or more subject areas or fields of knowledge.

The following outline of activities arising from a short walk is not an exhaustive list. However, it contains illustrations of the principles described above, relating objects of curiosity to children to the organized disciplines which they should master in their school years.

Be sure to take sturdy paper bags along on your nature walk so the children can collect rocks, sticks, plants, feathers, bones, insects, etc.--anything they would like to bring back to look at more closely. In the classroom, some children may wish to pool their collections and work in small groups, while others will prefer to work alone.

## TEACHING MATH WITH STONES

Math is a good subject to begin with, since there are countless ways of using rocks and stones to illustrate or strengthen mathematical concepts. Here are just a few starters:

Seriate: Have the children lay out the stones in order of size (smallest to largest), color (lightest to darkest), shape (flattest to roundest, thinnest to fattest).

Count: Separate stones into sets by color or size and put each set on a separate paper plate. Count the number of stones on each plate, and make a card for each plate showing the number of stones. Talk about how shepherds used "counting stones" to keep track of their sheep.

Weigh: Compare weight of rocks to other rocks, and to materials such as wood, sand, water, metal objects. See how many smaller stones it will take to balance a larger one.

Estimate: Try to guess from their size how many stones it might take to fill up a glass jar, or to make a stone "path" across one corner of the room. Have children check their estimates with the facts.

Measure: Use a tape measure to determine length, breadth, circumference of different rocks. (Talk about a "stone" as an old unit of measurement.) Make a crayon mark on a large stone, roll it along the floor, and count the number of times the crayon mark reappears--a way of measuring distance.

## SCIENCE IN STONES

The study of rocks is a natural jumping off place for introducing the natural and life sciences.

Identification: Look up in rock book. Make labels when identification is successful.

Rocks and Water: Do rocks sink or float? (Experiment with different sizes and shapes.) How much water does a rock displace? (Measure the spill-over.) Compare the weight of a cup of sand and a rock which displaces an amount of water equal to that displaced by the sand. Notice how shiny wet rocks are. Why? How does water change the shape of stones. Does wetness change the color of stones?

Rocks and Fire: With tongs, hold rock in a candle flame. Does it burn? Make pretty colors? Turn black or crumble? (Experiment with different rocks.)

Rocks and Motion: Discuss ways of moving large rocks (lever, crane, pulley, etc.). Talk about how the pyramids and other ancient buildings were constructed, contrast with modern mechanized building methods. Seek an opportunity to watch a large mechanical crane.

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Geography and Geology: What is the earth made of? Talk about different kinds of rocks and how they were formed, about the Rocky Mountains, about what makes a valley, landslides, river beds, erosion. How can rocks give clues about the past? (Fossils, arrowheads, etc.)

Human uses for Rocks: Talk about (or suggest projects involving) Stone Age tools, making fire with flint, weapons (throwing, arrowheads, sling shot, catapult), building shelters and houses, extracting metals from rocks, coal for power and heat, sand and gravel for roads, precious gems for decoration and jewelry, sculpture, stone fences, chalkboards, stones in fish tanks, plumb line with a stone, ad infinitum.

## TEACHING LANGUAGE ARTS

Expressions involving stones: Start with some of these and let the children think of other sayings, stories, and poems about stones. "A rolling stone gathers no moss." "People who live in glass houses shouldn't throw stones." "A stone's throw from here," "rock bottom," "stone cold," "stone deaf," "heart of stone," kidney stones, "stoned," gravel-voiced. Tell the story of "Stone Soup," tell how the Little Red Hen filled the bag with stones to fool the fox, tell about the Gorgon's Head, David and Goliath.

Famous rocks: Plymouth Rock, the Rock of Gibraltar, Stonehenge, Mt. Rushmore (presidents' faces carved in stone), "Rock of Ages," prehistoric cave paintings.

Creative activities: Have children try writing poems and stories about some aspect of rocks. Make a rock collage (glue small stones to background). Paint stones with bright colors, use as paperweights. Make ladybugs, beetles, animals from stones, paper, pipe cleaners, etc. Paint faces on stones. Make stone prints.

Vocabulary enrichment: Inspection and comparisons of stones provide a good opportunity to increase vocabularly. Describe shape: round, flat, square, triangular, pointed, top, bottom, wide, long. Color: pale, light, dark, speckled, striped. Size: small, large, wide. Weight: heavy, light. Comparatives: heavier, longer, lighter than. Texture: hard, soft, rough, smooth, flaky, crumbly, rounded. Let children feel the rocks in a bag and try to guess the color as you say, "find me a white rough rock, a yellow sharp pointed rock, a black smooth rock."

Movement: All the children will enjoy doing these pantomimes: fall like a rock; carry a heavy bucket of rocks; move a big rock; walk on a rocky river bed through water, walk with rocks in your shoes; stumble, slip, stub your toe; climb a rock face and feel for hand and foot holds in solid rock.

The same sorts of activities can also be planned around collections of sticks and plants. These brief outlines which follow present only a few suggestions to serve as starting points.

STICKS

Sticks and Math: Sort: lay out according to length, whether alive or dead, thickness, color, roughness, etc. Seriate (according to length): stick, rod, pole, log, stakes. Count: groups, sets. Weight and measure the sticks, estimate length of various sticks, talk about use of rods and poles, as measuring tools. Shapes: make geometric shapes with sticks and lumps of clay. Use of sticks in navigation.

Sticks and Science: Identify in tree book. Do sticks burn? Green ones too? Both wet and dry? Do sticks float or sink? (Does weight make any difference in ability to float?) Difference between green and dead sticks. Different qualities of various woods. What happens to trees in winter?

Camouflage: stick-like insects (like preying mantis), snakes. Field trip to tree nursery.

Human Uses for Sticks, Poles, Logs: Starting fires (by rubbing sticks together) and burning--for heat, power, etc. Early writing--pictures scratched in sand. Fishing rods, bow and arrow, boomerang, spear, house frames, teepee, hammock, boats, birch canoes, propulsion of boats, masts, rafts, fences, stilts, flag poles, totem poles, handles of tools, brooms (little sticks fastened to big stick), divining rod for water detection, beating drums, etc.

Sticks and Art: Use sticks to apply paint with or scratch designs in paint or crayon. Use in printing. Make collages. Make models with sticks and clay, sticks and paper (kites), sticks and cloth (teepee, hammock, wagon cover), sticks and sand (walls of a fort), etc. Draw stick men.

Sticks and Music: Sticks struck against one another, drum sticks, sticks hollowed for pipes, sticks used to clean flutes, etc. Sounds: scraping, grating, creaking, snapping, cracking, etc.

## PLANTS
(Leaves, flowers)

Leaves and Language Arts: Color: green, pale, dark, yellow, brown, red, bold, spotted, striped. Texture: rough, smooth, shiny, dull, soft, brittle. Shape: long, short, wide, narrow, fat, thin, round, square, heart-shaped, spear-shaped, etc. Verbs: fall, float, being blown by wind, drift, rustle, whisper.

Leaves and Math: Count number of leaves in a set, on a branch or stem. Make a graph of leaves changing color, different kinds of leaves, etc. Weigh fresh leaves and dry ones. Measure middlesized leaf, largest and shortest of each kind, report on leaf size. Measure surface area in squares. Estimate number of leaves on a branch, number of leaves on a card or piece of paper, in a box. Predict whether fresh or dead leaves will be heavier, and give reasons for prediction.

Leaves and Science: Identify leaves, small plants and trees. Compare. Talk about deciduous trees and evergreens, why leaves have prickles (thistles), why leaves color in fall. Watch leaf-buds unfurl on twigs in spring. Talk about leaf mold in compost for gardens, leaves as food for large and small animals and insects.

Human Uses for Leaves: Food, fodder, bedding. Tea, tobacco, vegetables, fodder for livestock, herbs used both for flavoring food and curing illnesses. Camouflage: Robin Hood and men dressed in green hard to find among trees of Sherwood Forest. Wartime helmets for jungle areas have leaf design to blend with leaves.

Leaves and Art: Make leaf collage, press leaves between wax paper layers, print with leaves, arrange autumn or spring branches in vases, etc.

Leaves and Music: Make instruments with dry dead leaves in cans to shake. Make sounds of leaves--rustling, murmuring, rhythmical sounds of someone walking through dead leaves in fall.

Leaves and Movement: Fluttering, drifting, falling, slow and fast movements to different words; floating, whirling, twirling, slipping, sliding, etc.

Creative Writing: Write poems, stories about trees, leaves.

## FLOWERS

Flowers and Language Arts: New vocabulary--colors (light, pale, dark, edged, shaded, speckled, etc.), parts (stem, petals, sepals, stamen, pollen), size (big, small, wide, long, deep, etc.), shape (round, trumpet-shaped, cup-shaped, bell-shaped), texture (soft, shiny, velvety, sticky, glossy, etc.), verbs (open, close, turn, bud, fade, wither). Find stories, poems, sayings (April showers bring May flowers, etc.) about flowers. Write stories and poems.

Flowers and Math: Count petals, sepals, stamens, etc. Seriate on basis of size or color. Sort, estimate, measure.

Flowers and Science: Identify and look at differences between some common flower families. Notice flowers turning toward the sun, notice different kinds of seeds. Think of uses for seeds. Make diagram of parts of a flower and name their functions. Grow flowers in classroom under various conditions and measure results. Record findings. Experiment with amount of water, different types of soils.

Flowers and Art: Flower designs, flower arrangements in vases, flower drawing and painting from real flower specimens. Flower painting from imaginary flowers. Make seed pictures glue different seeds to background.

Although children in some city schools may not have as much opportunity to collect leaves and stones, they can apply these same techniques with more available materials. Buttons, seeds, bottlecaps, cereals, pieces of cloth, and many kinds of junk materials can be used for sorting, counting, weighing and art activities, and as starting places for discussions of where objects came from, how they were made, and what they are used for.

## Postscript

The Educational Resources Information Center/Early Childhood Education Clearinghouse (ERIC/ECE) is one of a system of 20 clearinghouses sponsored by the United States Office of Education to provide the educational community with information about current research and developments in the field of education. The clearinghouses, each focusing on a specific area of education, (such as early childhood, reading, linguistics, and exceptional children), are located at universities and institutions throughout the United States.

The clearinghouses search systematically to acquire current, significant documents relevant to education. These research studies, speeches, conference proceedings, curriculum guides, and other publications are abstracted, indexed and published in Research in Education (RIE), a monthly journal. RIE is available at libraries, or may be ordered from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Another ERIC publication is Current Index to Journals in Education (CIJE), a monthly guide to periodical literature which cites articles in more than 560 journals and magazines in the field of education. Articles are indexed by subject, author, and journal contents, CIJE is available at libraries, or by subscription from CCM Information Corporation, 909 Third Avenue, New York, New York 10022.

The Early Childhood Education Clearinghouse (ERIC/ECE) also distributes a free, current awareness newsletter which singles out RIE and CIJE articles of special interest, and reports on new books, articles, and conferences. The ERIC/ECE Newsletter also describes practical projects currently in progress, as reported by teachers and administrators. For more information, or to receive the Newsletter write: ERIC/ECE Clearinghouse, 805 W. Pennsylvania Avenue, Urbana, Illinois 61801.